(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 28 November 2002 (28.11.2002)

PCT

(10) International Publication Number WO 02/095281 A1

(51) International Patent Classification⁷:

- - -

(21) International Application Number: PCT/DK02/00355

(25) Filing Language:

English

F16L 59/153

(26) Publication Language:

(22) International Filing Date:

English

(30) Priority Data:

PA 2001 00832

23 May 2001 (23.05.2001) DK

23 May 2002 (23.05.2002)

(71) Applicant (for all designated States except US): NKT FLEXIBLES I/S [DK/DK]; Priorparken 510, DK-2605 Brøndby (DK).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GLEJBØL, Kristian [DK/DK]; Kvædehaven 109, DK-2600 Glostrup (DK). WEDEL-HEINEN, Jakob [DK/DK]; Mosehøjvej 46B, DK-2920 Charlottenlund (DK).

(74) Agent: NKT RESEARCH & INNOVATION A/S; Scion.DTU, Diplomvej, Blgd. 373, DK-2800 Kgs Lyngby (DK).

(81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

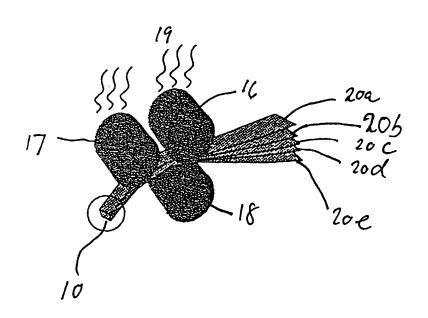
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD OF MANUFACTURING A REINFORCEMENT ELEMENT FOR A FLEXIBLE PIPELINE



(57) Abstract: For use in manufacture of reinforcement layers for flexible pipes which are capable of absorbing compressive or tensile forces, and which are used for the transport of oil and gas, a thermoplastic material is applied to a strength-imparting layer. The strength-imparting layers are reeled on reels, and following unreeling they are laminated by application of heat and in direct continuation applied to the flexible pipe. The strength-imparting layer expediently consists of a polymer which is reinforced with at least 20% by volume of fibres. The thermoplastic material is of a reversible type, i.e. it may change from being relatively soft, but non-sticky by changes in temperature. The use of the method according to the invention allows manufacture of very strong reinforcements for flexible pipes which cannot be manufactured using a

solid material, such as steel, since high preforming bending forces are required in the shaping. In addition, a reinforcement element is provided which is capable of resisting instantaneous shock loads as the thermoplastic material is protective.

BEST AVAILABLE COPY

VO 02/095281 A1